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Superfund Records Center

SITE: SULLIVAN'S LEDGE

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August 13, 2001

Mr. David O. Lederer
Remedial Project Manager
U.S. Environmental Protection Agency
1 Congress Street, Suite 1100
Boston, MA 02114

RE: Final Remedial Construction Report, Operable Unit 2, Sullivan's Ledge Superfund Site,
New Bedford, Massachusetts

Dear Mr. Lederer:

Attached please find for your review and approval, the Final Remedial Construction Report for the second operable unit (OU2) of the Sullivan's Ledge Site in New Bedford, Massachusetts. This report is being submitted to you on behalf of AVX Corporation. The Final Remedial Construction Report has been prepared consistent with Section IX, B. 6. of the Scope of Work (SOW) under the OU2 Consent Decree.

The Final Remedial Construction Report is divided into six sections in accordance with the close-out report requirements in the SOW. Nine appendices have also been included which provide additional documentation of the remedial action. Upon EPA approval of this report, subsequent OU2 activities at the site will continue in accordance with the EPA approved Operation and Maintenance Plan.

Please do not hesitate to call me if you have any questions regarding this submittal.

Sincerely,



Marilyn M. Wade, P.E., LSP
OU2 Project Manager

Attachments

CC (With full attachments):

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L. Blue, AVX Corp.
R. Carey, CNB
D. Dwight, M&E
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SDMS DocID

560831

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**FINAL REMEDIAL
CONSTRUCTION REPORT
SULLIVAN'S LEDGE
SUPERFUND SITE
SECOND OPERABLE UNIT
NEW BEDFORD,
MASSACHUSETTS**

August 13, 2001
PN: 28367-006-9650

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**FINAL REMEDIAL CONSTRUCTION REPORT
CLOSE-OUT REPORTS FOR THE
SULLIVAN'S LEDGE SUPERFUND SITE
SECOND OPERABLE UNIT
NEW BEDFORD, MASSACHUSETTS**

1.0 INTRODUCTION

This document is the Final Remedial Construction Report for the Sullivan's Ledge Superfund Site Second Operable Unit (OU2). The Final Remedial Construction Report was prepared for AVX Corporation by URS (formerly Dames & Moore) under the terms of the Consent Decree for OU2, (EPA, 1993a) and the Consent Decree Statement of Work (SOW) section IX.B.6. (EPA, 1993b). This document is submitted for U.S. Environmental Protection Agency (EPA) review and approval, after consultation with the Massachusetts Department of Environmental Protection (MADEP), in accordance with the SOW. The SOW requires that the Close-out Report(s) for OU2 address separately the following three divisions of the remedial work undertaken at the site: (1) the excavation of contaminated soil sediment, (2) the treatment and disposal of the excavated soil and sediment, and (3) wetland restoration. The SOW further requires that the Close-out Report include the following:

- a. *a summary of the procedures actually used (in chronological order) in implementation of the remedial action.*
- b. *tabulation of the analytical data obtained and field notes prepared during the course of the Remedial Design and Remedial Action activities including, but not limited to:*
 - (1) *QA/QC documentation of these results;*
 - (2) *presentation of these results in appropriate figures;*
- c. *a description, with appropriate photographs, maps and tables of the disposition of the Second Operable Unit (including areas and volumes of sediment/soil placement and disturbance);*
- d. *conclusions regarding conformance of remedial activities with the Performance Standards;*
- e. *a certification of completion from a professional engineer that the remedial construction has been completed in accordance with the requirements of the remedial design plans and specifications.*

The following sections are organized to address the SOW requirements in a single document.

This report includes 6 sections and 9 Appendices.

- Section 1 – Introduction
- Section 2 – Site Description and Remedial Action Objectives
- Section 3 – Chronological Summary of Remedy Implementation
- Section 4 – Description of the Construction Activities
- Section 5 – Conformance with OU2 Performance Standards
- Section 6 – Certification of Remedial Construction Completion

2.0 SITE DESCRIPTION AND REMEDIAL ACTION OBJECTIVES

This section provides a brief description of the Sullivan's Ledge OU2 Site and the objectives of the remedial actions undertaken therein. For a more complete discussion of the Sullivan's Ledge Superfund Site, refer to the Consent Decree and SOW, and the EPA Record of Decision, (EPA, 1991).

2.1 SITE DESCRIPTION

The Sullivan's Ledge Superfund Site (the Site) is located on Hathaway Road in New Bedford, Massachusetts. Figure 1 depicts the location of the site. The Site was divided into two operable units by EPA, and a separate Record of Decision (ROD) was signed for each unit of the Site. Operable Unit 1 (OU1) includes a 12-acre landfill Disposal Area containing former quarry pits, located south of Hathaway Road and the Unnamed Stream, which flows east of the disposal area, under Hathaway Road, and through the New Bedford Municipal Golf Course. Operable Unit 2 (OU2), north of Hathaway Road and within the golf course, includes the 13-acre wooded wetland area known as Middle Marsh, and a wetland area bordering the Unnamed Stream upstream of Middle Marsh which has alternately been known as Adjacent Wetland or Area 4.

The Site Disposal Area was a former granite quarry, which after quarrying ceased was operated by the City of New Bedford as a landfill between the 1930's and the 1970's. EPA investigations of the Site found polychlorinated biphenyls (PCBs), and polyaromatic hydrocarbons (PAHs) in surface and subsurface soils, and sediments, and volatile organic compounds (VOCs) and inorganics (most significantly lead and iron) in groundwater and sediments. EPA concluded that the sources of this contamination were the wastes disposed of in the former quarry pits, and the sediments that washed off the Disposal Area and were carried downstream into the golf course. EPA signed a ROD for OU1 in 1989. The major portion of the OU1 remedial action involved excavation, treatment and placement within the Disposal Area of contaminated soils and Unnamed Stream sediments, construction of an impermeable cap over the Disposal Area, and installation and operation of a groundwater collection and treatment system. EPA signed a ROD for OU2 in 1991. The major portion of the OU2 remedial action involved excavation of the PCB

contaminated sediments from Middle Marsh and Adjacent Wetland, treatment and placement within the Disposal Area, and subsequent restoration of the wetlands destroyed in the excavation.

2.2 REMEDIAL ACTION OBJECTIVES

EPA in its 1991 OU2 ROD identified the following objectives for the OU2 remedial action:

- Reduce exposure of aquatic organisms to PCB contaminated pore water and sediments either through direct contact or diet related bioaccumulation;
- Reduce exposure of terrestrial and wetland species to PCB contaminated sediment/soils through direct contact or diet related bioaccumulation;
- Prevent or reduce releases of PCBs to the Unnamed Stream and the Apponagansett Swamp; and
- Mitigate the impacts of remediation on wetlands.

The components of the remedial action selected by EPA to satisfy these objectives were:

- Site preparation;
- Excavation of contaminated soils and sediments from portions of Middle Marsh and Adjacent Wetland;
- Dewatering of the excavated materials;
- Disposal of the soil and sediment materials within the Disposal Area and beneath the cap;
- Restoration of the affected wetlands;
- Institutional controls to restrict future use of Middle Marsh and Adjacent Wetland; and
- Long-term environmental monitoring.

AVX Corporation and the City of New Bedford agreed to perform the OU2 remedial action, and this agreement is detailed in a 1993 Consent Decree with EPA and the Commonwealth of Massachusetts. Working in cooperation with the parties implementing the OU1 remedy, AVX Corporation contracted with Harding Lawson Associates (HLA) to construct the OU2 remedy. HLA began construction in April 1999 and completed construction in September 2000.

3.0 CHRONOLOGICAL SUMMARY OF REMEDY IMPLEMENTATION

The following sections provide a brief dated chronology of the activities undertaken to implement the OU2 remedy. The chronology has been subdivided into the three divisions of the remedial work: sediment removal, sediment treatment and disposal, and wetland restoration. A more complete description of the activities highlighted in the chronology is included in section 4 of this report. HLA refers to Harding ESE, remedial construction contractor for OU2 and OU1. NEE refers to New England Environmental, Inc., wetland restoration subcontractor to HLA. ENSR was a sub-consultant to URS for evaluation of the spotted turtle.

3.1 SOIL/SEDIMENT REMOVAL CHRONOLOGY

APRIL, 1999

4/1/99 HLA completes OU-2 mobilization.
4/2/99 HLA begins site clearing outside wetlands.
4/6/99 HLA begins construction of paved haul road, begins installation of erosion controls (silt fence).
4/13/99 HLA begins construction of stormwater controls (OU2 diversion swale).
ENSR begins spotted turtle removal program.
4/15/99 HLA begins construction of staging area and treatment pad.
4/16/99 HLA subcontractor, AB Fence, begins installing site security (fencing).
4/21/99 NEE conducts wetlands microtopography survey.
4/26/99 HLA begins construction of gravel haul roads.

MAY, 1999

5/13/99 ENSR completes spotted turtle removal program (no spotted turtles observed or trapped).
5/17/99 HLA completes installation of erosion controls (silt fence)
5/17/99 HCA installs air monitoring stations and begins implementation of air monitoring program.
5/18/00 HLA completes construction of gravel haul roads.
5/24/99 HLA begins construction of construction temporary water treatment system.

JUNE, 1999

6/3/99 HLA completes construction of treatment pad, begins construction of Area 4 access road.
6/4/99 HLA begins clearing of Area 4.
6/7/99 HLA subcontractor, Tilcon, begins paving main haul road and truck loading/wash area. HLA begins clearing in Middle Marsh.

6/8/99 Tilcon completes paving of main haul road and truck loading/wash area. HLA begins hauling tree cuttings to landfill.

6/15/99 HLA completes construction of Area 4 access road.

6/16/99 HLA completes clearing of Area 4.

6/17/99 HLA begins construction of Middle Marsh access roads.

6/18/00 HLA takes first conformation sample in Middle Marsh (WAR-1).

6/22/99 HLA begins to excavate sediments in Area 4.

6/24/99 HLA begins transporting Area 4 sediments to treatment pad, takes first conformation samples in Area 4.

6/25/99 HLA begins excavating and transporting Middle Marsh sediments to treatment pad.

6/28/99 HLA completes excavation of sediments in Area 4.

JULY, 1999

7/6/99 HLA completes conformation sampling in Area 4, completes most of backfill of Area 4, completes cutting tress in Middle Marsh begins hauling Middle Marsh grubblings to Disposal Area.

7/9/99 HLA completes construction of temporary water treatment system.

7/22/99 HLA completes Middle Marsh access roads, begins dewatering operations in Middle Marsh (Cell E).

7/26/99 AB Fence completes installation of site security (fencing).

7/28/99 HLA completes construction of stormwater controls (diversion swale),

AUGUST, 1999

8/12/99 HLA begins removal of Middle Marsh access roads (between Cells E&F).

SEPTEMBER, 1999

9/24/99 HLA begins removal of staging area and hauls to Disposal Area.

OCTOBER, 1999

10/13/99 AB Fence begins removal of site security (fence).

10/25/99 HLA begins removal of treatment pad.

10/26/99 HLA completes excavation of Middle Marsh sediments (Cell G).

NOVEMBER, 1999

11/1/99 HLA begins removing stormwater controls (diversion swale).

11/8/99 HLA completes removal and reclamation of stormwater controls (diversion swale).

11/11/99 HLA begins reclamation of treatment pad.

11/12/99 HLA begins removal of gravel haul roads.

11/15/99 HLA dismantles temporary water treatment system (total of 3,123,500 gallons treated).

11/18/99 HLA completes all conformation sampling, completes removal of treatment pad.

11/22/99 HLA completes removal of gravel haul roads.

11/23/99 HLA begins removal of main paved haul road.

11/30/99 HLA completes removal of main paved haul road.

DECEMBER, 1999

12/4/99 HLA begins installing winter stabilization controls.

JANUARY, 2000

1/12/00 HLA completes winter stabilization controls.

APRIL, 2000

4/21/00 HLA completes removal of Middle Marsh access roads.

JULY, 2000

7/24/00 AB Fence removes the last of the site security (fence).

SEPTEMBER, 2000

9/17/00 HLA begins and completes removal of Area 4 access road.

9/27/00 HLA completes final site restoration. Remainder of restoration undertaken by Johnson Golf Management.

3.2 SOIL/SEDIMENT TREATMENT AND DISPOSAL CHRONOLOGY

JUNE, 1999

6/29/99 HLA begins sediment stabilization/treatment tests.

JULY, 1999

7/17/99 HLA completes sediment stabilization/treatment tests.

7/19/99 HLA begins full scale Middle Marsh sediment stabilization.

7/28/99 HLA begins to open interim cover at Disposal Area for sediment placement, begins and completes transportation of Area 4 sediments to Disposal Area.

7/29/99 HLA begins testing of in-place stabilized sediment on landfill.

7/30/99 HLA begins transportation of stabilized Middle Marsh sediments to Disposal Area.

OCTOBER, 1999

10/26/99 HLA completes transportation of stabilized Middle Marsh sediments to Disposal Area.

DECEMBER, 1999

12/1/99 HLA begins spreading interim cover over sediments on Disposal Area.

12/10/99 HLA completes spreading interim cover over sediments on Disposal Area.

MARCH, 2000

3/29/00 HLA opens interim cover on Disposal Area to re-work/compact stabilized sediments.

JUNE, 2000

6/15/99 HLA completes compaction and testing of stabilized sediments on Disposal Area.

3.3 WETLANDS RESTORATION CHRONOLOGY

APRIL, 1999

4/21/99 NEE conducts wetlands microtopography survey.

JULY, 1999

7/6/99 HLA begins and completes most of backfill in Area 4.

AUGUST, 1999

8/11/99 HLA begins backfill of Middle Marsh (Cell F).

SEPTEMBER, 1999

9/16/99 NEE performs first spraying for wetlands invasive plant control.

OCTOBER, 1999

10/19/99 HLA begins placement of wetlands topsoil in Middle Marsh (Cells D & B/C).

10/20/99 HLA begins placement of wetlands topsoil in Area 4.

10/27/99 NEE begins planting in Middle Marsh.

NOVEMBER, 1999

11/15/99 NEE begins planting in Area 4.

APRIL, 2000

4/6/00 HLA installs upright tree trunks in Middle Marsh per EPA request.

4/10/00 NEE resumes planting in Middle Marsh.

4/12/00 HLA completes backfill of Middle Marsh (Cell A/N).

4/21/00 HLA completes removal of Middle Marsh access roads.

4/21/00 HLA completes placement of topsoil in Middle Marsh.

AUGUST, 2000

8/3/00 NEE begins initial monitoring of permanent plots in Middle Marsh.

8/29/00 NEE performs second invasive control by cutting cattails in Area 4 and spraying in Middle Marsh.

SEPTEMBER, 2000

9/13/00 NEE completes planting in Middle Marsh. ✓
9/17/00 HLA begins final backfill and grading in Area 4.
9/19/00 NEE completes planting in Area 4.
9/27/00 HLA completes final grading in Area 4. ✓

4.0 DESCRIPTION OF THE CONSTRUCTION ACTIVITIES

This section summarizes the construction activities associated with the disposition of OU2. Section 4.1 describes the soil/sediment removal. Section 4.2 describes the soil/sediment treatment and disposal. Section 4.3 describes the wetland restoration. Construction activities were conducted in accordance with the EPA approved Remedial Design, Plans and Technical Specifications (URS, 1999) and with the Contractor's Remedial Action (RA) Work Plan (HLA, 1999), which was approved by EPA. Tabulated data, photographic documentation, maps and figures have been utilized to help illustrate the activities undertaken, and references to these are included where appropriate. Appendix A.1 presents a photographic summary of the remedial activities within a snapshot segment of Middle Marsh. These photos span the period from June 1999 to October 2000, and illustrate clearing, excavation, backfilling, and wetland restoration. Appendix B presents the daily log of activities undertaken during the construction period.

Perimeter air monitoring and dust control were implemented throughout the construction period in accordance with the EPA approved HLA plans. Air monitoring for particulate matter (PM), PCBs and volatile organic compounds (VOCs) began with OU1 construction work south of Hathaway Road in the fall of 1998. The week of May 17, 1999, the air monitoring stations were repositioned to provide coverage for both OU1 and OU2 activities, and monitoring for VOCs was eliminated. During the OU2 construction activities 3 PCB and 3 PM monitors were operating south of Hathaway Road, and 1 PCB and 3 PM monitors were operating north of Hathaway Road. Air monitoring results were reported on a monthly basis and submitted separately to EPA.

4.1 SOIL/SEDIMENT REMOVAL

Soil/Sediment removal activities began April 1, 1999, were suspended for the winter on November 30, 1999 and resumed on April 7, 2000. Soil/Sediment removal was substantially complete on September 27, 2000. Soil/Sediment removal consisted of the following elements:

- Constructing and removing stormwater controls,
- Constructing and removing site security measures,

- Constructing and removing haul roads and staging area,
- Clearing and grubbing of the work areas,
- Constructing and removing wetland access roads,
- Excavating soil/sediments and transporting to the treatment pad, and
- Mobilizing and demobilizing.

Photographic documentation of these elements is included in Appendix A.2. HLA submittals related to soil and sediment removal are listed in Table 4-1.

4.1.1 Stormwater Controls

The stormwater controls consisted of silt fencing for runoff control and the construction and removal of a temporary diversion swale and riprap apron. The diversion swale was constructed to divert stormwater away from the Middle Marsh excavation areas. The diversion swale began at the southwest side of the construction area and ran north and east to discharge in the pond north of the construction area through a riprap apron. Locations of the temporary diversion swale and silt fencing are shown on Figure 2.

The diversion swale was excavated and shaped with existing on-site topsoil, lined with erosion control matting and seeded. The riprap apron was constructed with a sand core berm overlain by non-woven geotextile and riprap with a 6-inch perforated pipe running through the sand core. Silt fence was installed for runoff control of disturbed areas of the site. The manufactured silt fence was installed by driving the attached stakes (7.7 foot spacing) into the ground and burying the bottom edge of the fence fabric on the up slope side approximately 6 inches deep. The silt fence was located on both sides of the paved haul road, around the treatment pad area, around the temporary stockpile area, and along the down slope side of the diversion swale. Erosion controls (including silt fence) were inspected daily by URS and documented in the Daily Monitoring Activities sheet of the CQA checklists (Appendix C). HLA also inspected erosion controls as part of their Storm Water Pollution Prevention Plan. These inspections occurred at minimum of once per week during normal weather, daily during periods of prolonged rain, and immediately following storm events that resulted in 0.5 inches or more of rain. Deficiencies noted during inspection were immediately brought to the attention of the Contractor for repair or replacement.

Conformance testing and measurement was performed through submittals, field observations and direct measurements using a pop level and documented in the daily field logbook and/or the appropriate CQA checklist. Documentation of CQA for construction is found in Appendix C.1. Construction of stormwater controls began on April 13, 1999 and was complete on July 28, 1999. Restoration of the stormwater controls began on November 1, 1999 and was complete on November 8, 1999. Documentation of CQA for restoration is presented in Appendix C.3.

Stormwater controls were constructed and reclaimed in accordance with the Plans and Technical Specifications, specifically Section 02270.

4.1.2 Site Security

Site security consisted of installing a chain link fence around the construction site to limit access to the construction area. Fencing, gates and hardware were installed by HLA's subcontractor AB Fence.

Conformance testing and measurement was performed through submittals and field observations and documented in the daily logbook and/or the appropriate CQA checklist. Documentation is presented in Appendix C.1 (installation) and Appendices C.3 and C.4 (removal). Installation of the site security began on April 16, 1999 and was complete on July 26, 1999. Removal of the site security began on October 13, 1999 and was complete on July 24, 2000. Site security was installed and removed in accordance with the Plans and Specifications, specifically Section 02831.

4.1.3 Haul Roads and Staging Area

Paved and gravel haul roads were constructed for the remedial activities. The main paved haul road was constructed to promote hauling of the stabilized sediments to the Disposal Area and material delivery by providing a better running surface with low maintenance and limited dust production. The paved haul road consisted of a compacted subgrade, overlain with a minimum 12-inch compacted layer of MADPW type M1.03.0, type a or b base course material, then paved with 3 inches of Class I bituminous concrete. HLA also elected to install woven geotextile under the subgrade material. The paved haul road ran from the north side of Hathaway Road directly opposite the main Disposal Area entrance to the north and east to the treatment pad area between Area 4 and the Middle Marsh. The pavement at the northwest corner of the treatment pad was sloped to drain into the lined water collection sump and was used as a truck wash/decon pad.

The gravel haul roads were constructed to facilitate hauling of sediments from the wetlands to the treatment pad. Construction of the gravel haul road consisted of stripping and proof rolling the subgrade, placing a 12-inch minimum compacted layer of MADPW type M1.03.0, type a or b base course material overlain by a non-woven geotextile marker layer and a final 6-inch compacted layer of MADPW type M1.03.0 type b or c surface course material. The non-woven geotextile was installed to create a visual marker between the top 6 inches, which during removal would be considered potentially contaminated requiring disposal in the Disposal Area, and the material below it, which would be considered "clean". The gravel haul roads were located on the north and south sides of the treatment pad.

Conformance testing and measurements for the haul roads were performed through submittals, field observations and direct measurements and documented in the daily logbook and/or the appropriate CQA checklist. Direct measurements included compaction testing using a nuclear moisture/density gauge and by digging test holes to check layer thickness. Documentation is presented in Appendix C.1 (construction) and C.3 (removal). Construction of the paved haul road began on April 6, 1999 and was complete on June 8, 1999. Construction of the gravel haul roads began on April 26, 1999 and was complete on May 18, 1999. Removal of the paved haul road began on November 23, 1999 and was complete on November 30, 1999. Removal of the gravel haul roads began on November 12, 1999 and was complete on November 22, 1999. Haul roads were constructed and removed in accordance with the Plans and Technical Specifications, specifically Section 02500.

4.1.4 Clearing and Grubbing

Construction activities associated with clearing and grubbing consisted of cutting trees in the work areas and removing the stumps and duff prior to sediment excavation. HLA elected to hand cut the trees using chain saws and then grub the site as the wetlands access roads were advanced into the work areas. Grub materials were hauled directly to the Disposal Area.

Conformance testing and measurements for clearing and grubbing was performed through field observations and documented in the daily logbook and/or the appropriate CQA checklist.

Documentation is presented in Appendix C.1. Clearing was performed in a manner that minimized cross-contamination. Clearing in Area 4 began on June 4, 1999 and was complete on June 16, 1999. Clearing in the Middle Marsh began on June 7, 1999 and was completed on July 6, 1999. As previously noted grubbing was conducted as the wetlands access roads were advanced into the work areas. Hauling of grub material to the Disposal Area began on July 6, 1999 and was complete on September 2, 1999. Documentation of the disposal of grub material is presented in Appendix C.2. Clearing and grubbing was conducted in accordance with the Plans and Technical Specifications, specifically Section 02110.

4.1.5 Wetland Access Roads

Access roads were advanced into the wetlands to facilitate activities associated with sediment removal. There were two types of access road designs based on the depth of the organic soils. The organic soil was probed and if it was less than 48 inches it was excavated and embankment sand was placed as a sub-base. If the organic soil was greater than 48 inches in depth it was excavated to a depth of 24 inches and a woven geotextile installed. The geotextile was the overlain with Tensar BX 1500 geogrid which in turn was overlain with a center strip of Tensar BX 1100 geogrid prior to placing the embankment sand sub-base.

Once the embankment sand was built up to the proper elevation a second layer of Tensar BX 1100 geogrid was installed. The geogrid was then overlain with an initial 6-inch lift of MADPW type M1.03.0, type b or c gravel material. Then a non-woven geotextile cushion was keyed into the road and draped over the shoulder and a non-woven geotextile marker layer was installed then overlain with a final 6-inch lift of MADPW type M1.03.0, type b or c gravel material. The non-woven geotextile was installed to create a visual marker between the top 6 inches, which during removal would be considered potentially contaminated requiring disposal in the Disposal Area, and the material below it, which would be considered "clean" and could be used as backfill material. The geotextile shoulder cushion served the same purpose as the marker layer. A single access road was constructed in Area 4 and a series of access roads were advanced into the Middle Marsh. The Middle Marsh roads divided the marsh into cells as shown in Figure 3.

Conformance testing and measurements for the wetland access roads were performed through submittals, field observations and direct measurements and documented in the daily logbook and/or the appropriate CQA checklist. Documentation is presented in Appendices C.1 and C.2 (construction) and Appendices C.3 and C.4 (removal). Construction of the Area 4 road began on June 3, 1999 and was completed on June 15, 1999. Construction of the Middle Marsh roads began on June 17, 1999 and was completed on July 22, 1999. Removal of the Area 4 access road began and was completed on September 17, 2000. Removal of the Middle Marsh access roads began on August 12, 1999 and was complete on April 21, 2000. Wetland access roads were constructed and removed in accordance with the Plans and Technical Specifications, specifically Section 02500.

4.1.6 Soil/Sediment Excavation and Transportation to the Treatment Pad

Soil/Sediment (sediment) excavation and transportation consisted of excavating the sediments and transporting them to the treatment pad, confirmation sediment sampling and analysis, and effluent water treatment. Sediments were pulled to the edges of the "cells" created by the wetland access roads using a Hyundai 290 LC3 extended boom excavator capable of a 50-foot reach and allowed to dewater. These sediments were then excavated and loaded on to off road, rear dump trucks and transported to the treatment pad. The sediments were excavated in a manner that minimized downward mixing. X

Once excavation in a Cell was complete the Cell had to be dewatered prior to collecting conformation samples. Water from the cell was either pumped into an unremediated cell provided over topping of the access road surrounding the Cell did not occur, or pumped directly to the treatment pad sump for effluent treatment. Water was moved using portable 4-inch pumps.

Conformance testing and measurements for the sediment excavation ^{were} ~~was~~ performed through submittals, field observations and direct measurements and documented in the daily logbook and/or the appropriate CQA checklist. Documentation is presented in Appendix C. HLA used direct measurement in the form of survey data to assure that the sediment had been excavated to

the proper depth (minimum of 18 inches). Excavation of sediments in Area 4 began on June 22, 1999 and was completed on June 28, 1999. Excavation of sediments in Middle Marsh began on June 25, 1999 and was completed on October 26, 1999. Sediment excavation and transportation was conducted in accordance with the Plans and Technical Specifications, specifically Section 02226. According to HLA measurements, of 25,485 cubic yards of sediment were excavated from OU2.

Confirmation samples were collected during the wetland access road construction and once excavation was completed and the Cell was dewatered. The sampling frequency was one sample per 400 linear feet of access road, three samples per interior Cell, and one sample per 200 feet of perimeter Cell. Samples were collected by HLA and shipped to the analytical laboratory under a chain of custody. Sample locations were marked and surveyed and are presented in the Contractor's record documents (Appendix D). All sampling was done in the presence of the oversight personnel. Samples were analyzed for PCBs using EPA method 8082. Three samples located in aquatic portions of the Middle Marsh were also analyzed for total combustible organics. Any sample that had an analytical result above the clean up criteria was re-located, an area 10 by 10 feet was re-excavated to a depth of 12 inches, and the excavation was re-sampled. A total of three sample locations required re-excavation and re-sampling. Table 4-2 summarizes the results of the confirmation samples. Appendix E contains the Data Validation Report for these analyses.

Conformance testing and measurements for the sediment sampling was performed through submittals, field observations and direct measurements and documented in the daily logbook and/or the appropriate CQA checklist. Documentation is presented in Appendix C. Sampling of sediments in Area 4 began on June 24, 1999 and was completed on July 6, 1999. Sampling of sediments in Middle Marsh began on June 18, 1999 and was completed on November 18, 1999. Sediment excavation and transportation was conducted in accordance with the Plans and Technical Specifications, specifically Section 02226 and the Construction Phase Environmental Monitoring Plan. Analytical results of the sediment sampling are presented in Table 4-2.

Effluent water treatment (construction water) was collected in the lined treatment pad sump and pumped through a temporary water treatment system. The treatment system consisted of a sand filtration vessel and two carbon units. Construction water was generated from a variety of sources including treatment pad runoff, excavation dewatering, truck wash/decon water and storm water. A sample of the treated water was collected at a frequency of every 700,000 gallons per HLA's Construction Water Management Plan (Section 5.1.1) and analyzed for Volatile Organics (EPA Method 624), Trace Metals, Pesticides (EPA Method 608), PCBs (EPA Method 608), and pH.

Conformance testing and measurements for construction water treatment was performed through field observations and direct measurements and documented in the daily logbook and/or the appropriate CQA checklist. Documentation is presented in Appendix C. A total of 3,123,500 gallons of construction water was treated during site work. The construction water treatment began on July 9, 1999 and was completed on November 15, 1999. Construction water treatment was conducted in accordance with the Plans and Technical Specifications, specifically Sections 02225 and 02226 and the Contractor's Construction Water Management Plan. Analytical results of the treated water sampling are presented in Appendix F.

4.2 SOIL/SEDIMENT TREATMENT AND DISPOSAL

This section summarizes the construction activities associated with soil/sediment disposal. Soil/Sediment disposal activities began June 29, 1999, were suspended for the winter on November 30, 1999 and resumed on March 29, 2000. Soil/Sediment disposal was substantially complete on June 15, 2000. Photographic documentation of soil and sediment removal and treatment is presented in Appendix A.3. The calculated volume of soil, sediment and debris wastes that was excavated from Middle Marsh and the Adjacent Wetland was 25,485 cubic yards. The calculated volume of soil, sediment and debris from OU2 that was placed on the Disposal Area was 27,249 cubic yards. The additional volume was the result of bulking during treatment. Soil/Sediment disposal consisted of the following elements:

- Stabilization of sediments,
- Transportation of stabilized sediments to the Disposal Area, and
- Placement and compaction of stabilized sediments.

Photographic documentation of these elements is included in Appendix A.3. HLA submittals related to soil treatment and disposal are listed in Table 4-1.

4.2.1 Stabilization of Sediments

Stabilization of the sediments consisted of drying and augmenting the excavated sediments on the treatment pad prior to transporting them to the Disposal Area. The first step in the stabilization process was for the Contractor to perform a treatment demonstration test. HLA began the treatment demonstration testing on June 29, 1999 and completed the testing on July 17, 1999. Results of the demonstration testing were presented in a letter report by HLA dated July 28, 1999. Based on the demonstration testing a stabilization methodology was created. Sediments were pulled to the sides of the Cells and allowed dewater for one to two days. Following dewatering activities, the sediments were transported to the treatment pad where stabilization agents were added. These agents included 20 percent kiln dust and 10 percent sand by volume mixed into the sediments using an excavator. This methodology was used throughout the sediment stabilization process of the project.

Conformance testing and measurement was performed through submittals and field observations and documented in the daily logbook and/or the appropriate CQA checklist. Documentation is presented in Appendix C. Full scale sediment stabilization began on July 19, 1999 and was complete on October 26, 1999. Sediment stabilization was performed in accordance with the Plans and Specifications, specifically Section 02226 and the Treatment Demonstration Testing report.

4.2.2 Transportation of Stabilized Sediments to the Disposal Area

Once the sediments were stabilized on the treatment pad, they were loaded into off road, rear dump trucks using a frontend loader and hauled to the Disposal Area. The trucks were loaded on the pavement next to the treatment pad (truck wash/decon area) and any loose material on the outside of the trucks was washed off using a pressure washer. Water from this process was collected in the treatment sump and treated. The stabilized sediment was then hauled to the Disposal Area across Hathaway Road and dumped in the appropriate location. As the trucks left the landfill their tire were again washed with a pressure washer.

Conformance testing and measurement was performed through field observations and documented in the daily logbook and/or the appropriate CQA checklist. Documentation is presented in Appendix C. Also a load count was compiled for each day of hauling to keep a rough running total of the sediment placed in the landfill. Transportation of stabilized sediment began on July 28, 1999 and was complete on October 26, 1999. Transportation of stabilized sediments was performed in accordance with the Plans and Specifications, specifically Section 02226 and HLA's Traffic Control Plan.

4.2.3 Placement and Compaction of Stabilized Sediments

The stabilized sediments hauled to the landfill were spread out to 12-inch lifts using bulldozers. If the material needed further moisture conditioning it was turned using either bulldozers or a tractor pulled disc harrow. Once the material was at the proper moisture content it was compacted using a vibratory roller. The compaction of the material was then checked using a nuclear moisture/density gauge. The sediments were also tested at a frequency of every 3000 cubic yards for compaction (ASTM 698), organic content, and unconfined compression (ASTM 2166).

Conformance testing and measurement was performed through field observations and direct measurement and documented in the daily logbook and/or the appropriate CQA checklist. Documentation is presented in Appendix C. Results of the geotechnical testing are presented in

Appendix G. Placement of stabilized sediment began on July 28, 1999 was suspended for the winter on December 1, 1999, resumed on March 29, 2000 and was complete on June 15, 2000. Placement of stabilized sediments was performed in accordance with the Plans and Specifications, specifically Section 02226. According to HLA measurements, the treated placed and compacted sediments from OU2 total 23,075 cubic yards.

4.3 WETLAND RESTORATION

This section summarizes the construction activities associated with wetlands restoration. Wetlands restoration activities began July 6, 1999, were suspended for the winter on December 17, 1999 and resumed on April 4, 2000. Wetlands restoration was substantially complete on September 27, 2000. Wetlands Restoration consisted of the following elements:

- Wetlands backfill and shaping,
- Planting, and
- Maintenance and monitoring.

Photographic documentation of these elements is included in Appendix A.4. HLA submittals related to wetland restoration are listed in Table 4-1. The contractor's record documents (Appendix D), present the as-built plan and cross sectional views of the restored site.

4.3.1 Wetlands Backfill and Shaping

Wetlands backfill and shaping was conducted once a Cell or excavation was tested, analytical results for the excavation were below the clean up criteria, and EPA approved the backfill. EPA approval letters are included in Appendix H. Backfill consisted of filling the excavation with silty sand, shaping hummocks, and placing a minimum of 8 inches of wetlands topsoil. The silty sand was hauled in on off road, rear dump trucks and placed from the access roads using excavators. As work progressed the access road sand sub-base was also used for backfill and side cast into the Cells. This was done once the top 6 inches of the road surface was removed

including any geosynthetics and taken to the Disposal Area. Hummocks and drainage channels were then shaped with the sand backfill.

Once backfilling and shaping of the silty sand was complete a minimum of 8 inches of wetland topsoil was installed again using dump trucks and excavators. The wetland topsoil consisted of a blend of 40 percent silty sand (embankment sand) and 60 percent topsoil. The wetlands topsoil was mixed on site prior to placement and tested for organic content. Backfill and topsoil was placed approximately 2 inches above original grade to allow for settlement.

Conformance testing and measurement was performed through submittals, field observations and direct measurement and documented in the daily logbook and/or the appropriate CQA checklist. Documentation is presented in Appendix C. Results of the geotechnical testing (organic content of wetlands topsoil) are presented in Appendix G and survey data (transects of Middle Marsh) are presented in the Contractor's record documents (Appendix D). An evaluation of the final transect data relative to hummock height and cover is included in Appendix I. Backfill and shaping of the wetlands began on July 6, 1999 was suspended for the winter on December 17, 1999, resumed on April 6, 2000 and was substantially complete on September 27, 2000. Backfill and shaping was performed in accordance with the Plans and Specifications, specifically Section 02940, the Wetlands Restoration Plan and the Contractor's Wetland Restoration Plan.

4.3.2 Planting

Planting was conducted once an area was properly backfilled and shaped. Planting consisted of installing trees, shrubs, bare root plants and seeding with special wetland seed mix. HLA's wetlands sub-contractor New England Environmental (NEE) conducted the planting. NEE used a power auger to plant trees and shrubs and planted the bare root plants by hand. Seed was placed using a manually operated broadcaster.

Conformance testing and measurement was performed through submittals, field observations and direct measurement and documented in the daily logbook and/or the appropriate CQA checklist. Documentation is presented in Appendix C. Planting of the Middle Marsh began on October 27,

1999 was suspended for the winter on December 17, 1999, resumed on April 10, 1999 and was substantially complete on September 13, 2000. Planting of Area 4 began on November 15, 1999 was suspended for the winter on December 17, 1999, and was substantially complete on September 19, 2000. An area next to Area 4 that was inadvertently cleared of trees during initial site work, was replanted. Planting was performed in accordance with the Plans and Specifications, specifically Section 02940, the Wetlands Restoration Plan and the Contractor's Wetland Restoration Plan.

4.3.3 Maintenance and Monitoring

Operation, maintenance and monitoring (O&M) officially begins once the EPA approves the final Closeout Report. HLA is responsible for O&M for a minimum of at least 3 full growing seasons or until accepted by the Engineer. The City of New Bedford will then be responsible for O&M.

HLA through their sub-contractor NEE has already performed several O&M activities. These activities include wetland invasive plant control through spraying (conducted in September, 1999 and August, 2000), cattail cutting (conducted in Area 4 in August, 2000), and willow planting in Middle Marsh (completed in September, 2000). NEE has been actively monitoring plant growth and pruning and staking trees as needed. NEE has also conducted an initial monitoring of three plots in the Middle Marsh (conducted on August 8, 2000).

Conformance testing and measurement will be performed through field inspections to be conducted at a frequency and in accordance to the guidelines set forth in the Operation and Maintenance Plan. Annual reports will be generated and submitted to the EPA.

4.4 CHANGE ORDERS

Changes to the design elements of the OU2 remedial activities were kept to a minimum and were tracked using change order requests. No major changes requiring EPA approval were necessary during construction. Six minor changes were required, and were accepted by EPA. These change order requests are summarized in Table 4-3. EPA approval of these Changes maybe

found in Appendix H.

5.0 CONFORMANCE WITH OU2 PERFORMANCE STANDARDS

The final Remedial Design included a plan for demonstrating compliance with the SOW Performance Standards. Specifically, the SOW required:

Settling Defendants shall submit a Demonstration of Compliance Plan which describes how the Settling Defendants shall demonstrate compliance with all Performance Standards and, including but not limited to, the following requirements:

- a. Excavation and disposal of sediment/soils with contaminant levels above the Sediment/Soil Cleanup Standard;*
- b. Construction of a cap with permeability; less than or equal to 10⁻⁷ cm/sec as described in Section IV of the SOW attached to the Consent Decree in United States vs. Acushnet Company, et al., and amendments thereto (demonstration of compliance may reference approved documentation prepared pursuant to the Consent Decree in United States vs. Acushnet Company et al., and amendments thereto and may not involve independent testing of the cap construction);*
- c. Fill and restoration of excavated areas as described in Section IV. of this SOW;*
- d. Restoration/enhancement of wetlands as described in Section VI of this SOW; and*
- e. Attainment of all Performance Standards described in Sections IV.F., V.B. and VI.B. of this SOW, and in Section IV.H.2. of the SOW attached to the Consent Decree in United States vs. Acushnet Company et al., and amendments thereto;*

The final Site Closure Plan/Demonstration of Compliance Plan was implemented during the course of remedial construction. The results of the implementation are described in the following sections. This demonstration of compliance is being used to secure the certification of completion of construction (per Sections IX.B.6. and 7. of the SOW-OU2) from EPA. It is not intended to be used for the certification of completion of remedial action (per Section XV, paragraph 51 of the Consent Decree) and certification of Completion of the Work (per Section XV, paragraph 52 of the Consent Decree).

5.1 SOURCE CONTROL: REMEDIATION OF CONTAMINATED SEDIMENT/SOILS

5.1.1 Compliance With Excavation and Disposal Requirements

Section IV.F. of the SOW-OU2 identifies the specific Performance Standards for the sediment excavation, treatment and disposal (source control) components of the selected remedy. These Performance Standards and the remedial actions undertaken to demonstrate compliance with these standards are summarized below.

(1)

IV.F.1.a. Sediment/Soil Cleanup Level for Aquatic Areas in Middle Marsh

The sediment/soil cleanup level for the aquatic area in Middle Marsh...is the interim mean sediment quality criterion (SQC) of 20 micrograms of total PCBs per gram of carbon (ug/Gc).

Demonstration of Compliance

Sediments that exceeded the aquatic cleanup standards were excavated from Middle Marsh. This aquatic portion of Middle Marsh which was excavated is shown on the Contractor's record documents (Appendix D). The Contractor collected sediment confirmatory samples as follows:

<u>Sampling location</u>	<u>Sample Frequency</u>
Along access roads	One sample per 400 lf
Within interior cells	Three samples per cell

Analytical results from confirmatory samples in the aquatic area indicate that the cleanup standards have been met. (See Table 4-2, samples WAR3, MMJ/K6, MMA/N6).

(2)

IV.F.1.b. Sediment/Soil Cleanup Level for Non-aquatic Area in Middle Marsh and for the Adjacent Wetland

For non-aquatic areas in Middle Marsh...and for the Adjacent Wetland, the sediment/soil cleanup level is 15 mg/kg total PCBs."

Demonstration of Compliance

Sediments/soils that exceeded the non-aquatic cleanup standard were excavated from Middle Marsh and the Adjacent Wetland. The areas of the Adjacent Wetland and Middle Marsh which were excavated are shown on the Contractor's record documents (Appendix D).

The Contractor collected sediment/soil confirmatory samples according to the following guidelines:

<u>Sampling location</u>	<u>Sample Frequency</u>
Along access roads	One sample per 400 lf
Within interior cells	Three samples per cell
Within perimeter cells	One sample per 200 lf along the perimeter of the area of excavation
Within Adjacent Wetland	One interior sample and one sample per 200 lf along the perimeter of the area of excavation

The analytical results from confirmatory sampling indicate that the cleanup standards have been met.
(See Table 4-2)

(3)

IV.F.2.a. Remedial activities in or affecting wetlands or floodplains shall be performed in accordance with Executive Orders 11990 and 11988; 40 CFR Part 6, Appendix A; and Massachusetts Wetlands Protection Regulations, 310 CMR 10.00;

Demonstration of Compliance

The significant modifications to Middle Marsh and the Adjacent Wetland were considered necessary to protect wildlife. Remedial actions were conducted so that impacts to wetlands were minimized. Erosion control measures were installed and maintained throughout construction.

(4)

IV.F.2.b. Any activities that involve the discharge of dredge or fill materials in wetlands shall be conducted in a manner utilizing the alternative which would have the least adverse impact on the aquatic ecosystem and the environment pursuant to 40 CFR 230.10(a). Any areas impacted by remedial activities conducted under this SOW that are to be filled, shall be filled with materials to achieve the objectives of the approved wetland restoration program...using either off site materials...or on site sediment/soils with total PCB concentrations of less than one mg/kg PCB..."

Demonstration of Compliance

The discharge of fill materials in wetlands was conducted to have the least adverse impact on the aquatic ecosystem and the environment. Work proceeded from upstream to downstream areas to minimize the potential for contaminant migration. Middle Marsh excavations proceeded within individual cells, minimizing impact to adjacent wetland areas. Soils used as fill were tested to demonstrate that they met wetland soil requirements and have a total PCB concentration of less than 1 mg/kg.

(5)

IV.F.2.c. Road construction shall include at a minimum, the following:

- (1) to the extent necessary, a gravel roadway shall be constructed around the wetland to minimize impacts to areas not requiring remediation;*
- (2) to minimize fill placed in wetlands, narrow access roads shall be constructed within areas requiring excavation;*

(3) *slumping of fill shall be minimized by placement of fill on geotextile or geogrid mats;*

(4) *measures such as signs, signals or temporary widening of Hathaway Road shall be implemented to mitigate traffic problems to and from Hathaway Road.*

Demonstration of Compliance

A paved haul road into the construction area, and gravel haul roads outside the area of excavation were constructed consistent with the design specifications and drawings. Within the areas of excavation, access roads were constructed to the minimum width required to carry the long boom track-mounted excavator and dump trucks. The wetland access roads were constructed with geotextile for side slope reinforcement and geogrid for subgrade reinforcement.

Mitigation of traffic problems on Hathaway Road, during implementation of RA for OU1 and OU2, were addressed by the City of New Bedford through implementation of their traffic control plan.

(6)

IV.F.3.a. To the extent that off Site treatment or disposal is required, Settling Defendants shall arrange for off Site treatment or disposal at a disposal facility which is operated in compliance with applicable RCRA and/or TSCA requirements, in accordance with Section 121(d)(3) of CERCLA..."

Demonstration of Compliance

There was no off-site disposal required during construction. All wastes were treated and placed in the (OU1) Disposal Area.

(7)

IV.F.3.b. Air emissions shall be monitored and shall meet the primary and secondary standards for particulate matter under the National Ambient Air Quality Standards...

IV.F.3.c. Air emissions shall be monitored and shall meet the pertinent portions of the Massachusetts Air Pollution Control Regulations...and the requirements of the Massachusetts Allowable Ambient Air Limits.

IV.F.3.d. Air emissions shall meet the requirements of...OSHA

Demonstration of Compliance

An Air Monitoring program was implemented to monitor and ensure compliance with these emission limits. Perimeter air monitoring and dust control reports documenting the air program activities were submitted to EPA on a monthly basis during construction.

(8)

IV.F.3.e Any discharge of treated water...shall meet the substantive requirements of the Clean Water Act relating to the National Pollution Discharge Elimination System (NPDES); Massachusetts Surface Discharge Program...and Massachusetts Water Quality Standards

Demonstration of Compliance

Construction water was treated and discharged to the New Bedford POTW in accordance with their requirements. Analytical data for construction water is presented in Appendix F.

(9)

IV.F.3.f. Transport of hazardous wastes shall be in accordance with applicable RCRA and Department of Transportation (DOT) regulations...

Demonstration of Compliance

Off-site treatment or disposal was not required.

(10)

IV.F.3.g. Solid debris...excluding trees and brushes shall be decontaminated in accordance with 40 CFR 761.79 prior to off site transport or off site disposal.

Demonstration of Compliance

Off-site treatment or disposal was not required.

(11)

IV.F.3.h. Settling Defendants shall design facilities and use best management practices related to the storage and use of solvents and other chemical products and wastes in accordance with state and federal regulations...

Demonstration of Compliance

Solvents and other chemical products were not utilized during sediment excavation, treatment and disposal. The Contractor's SPCC Plan was included in the EPA approved RA Work Plan.

(12)

IV.F.3.i Any sediment/soils with PCB levels exceeding 50 ppm excavated during remedial activities which are stored on site shall be stored in accordance with state and federal regulations...Storage facilities shall meet the following criteria:

- i. *Adequate roof and walls to prevent rain water from reaching stored materials*
- ii. *Adequate floor with continuous curbing.*
- iii. *No openings that would permit liquids to flow from curbed area*

Demonstration of Compliance

None of the soils handled during the OU2 RA exceeded the 50 ppm level for PCBs.

(13)

IV.F.3.j. The Settling Defendants shall comply with applicable or relevant and appropriate portions of the Solid Waste Disposal Act, as amended, 42 USC 6901 et seq., and 40 CFR Parts 264 and 268, to the extent that federal regulations governing hazardous wastes have been promulgated for which there is no Massachusetts counterpart under the authorized state program.

Demonstration of Compliance

RCRA requirements for which there is no Massachusetts counterpart include: (1) 40 CFR part 264.18 (Location Standards) and (2) 40 CFR Parts 268.34 to 268.39 (LDRs). Demonstration of compliance with 40 CFR Part 264.18 was addressed by OU1. Because predesign TCLP metals analysis demonstrated that the sediment/soils would not be a characteristic hazardous waste, the land disposal restrictions of these parts did not apply to the RA.

5.1.2 Demonstration of Compliance With Cap Construction Requirements

Section VII.G. of the SOW requires a demonstration that the cap over the Disposal Area be constructed to meet the permeability requirement of less than or equal to 10^{-7} cm/sec, as described in the SOW-OU1.

As allowed by Section VII.G.2.b. of the SOW, rather than conduct independent testing of the cap construction, OU2 relied upon the demonstration of compliance performed by OU1.

5.2 MANAGEMENT OF MIGRATION: CONTROL OF AIR EMISSIONS

5.2.1 Compliance with Air Program Requirements

SOW Section V requirements for the control of air emissions include:

- *"Settling Defendants shall design, operate monitor and maintain the management of migration components (control of air emissions) in compliance with the Middle Marsh ROD for the Selected Remedy and Section VI of the Consent Decree, and in a manner that meets the Cleanup Standards and Performance Standards and the requirements of this SOW."*
- Evaluate the potential for air emissions from remedial activities, including excavation activities, treatment processes, solids handling and disposal activities. (Section V.A., page 17)
- Provide for control of air emissions. (Section V.A., page 17)
- Mitigate the release or threat of release of air emissions. (Section V.A., page 17)
- Utilize measures to limit air emissions including fugitive dust from excavation, storage, treatment and disposal activities, and (Section V.A., page 17), and
- Design and implement an air monitoring program. (Section V.A., page 17)

The Cleanup and Performance Standards for the control of air emissions are given in Section V.B. of the SOW, and reference ARARs contained in the OU2 ROD, and the Cleanup and Performance Standards detailed in Sections IV.F.3.b., c., d., and j. of the SOW-OU2.

An Air Monitoring program was implemented to monitor and ensure compliance with these emission limits. Perimeter air monitoring and dust control reports documenting the air program activities were submitted to EPA on a monthly basis during construction.

5.3 WETLAND RESTORATION/ENHANCEMENT

5.3.1 Compliance With Wetland Requirements

SOW requirements for wetland restoration/enhancement include:

"Excavation, treatment and disposal of contaminated sediment/soils and any ancillary activities will result in unavoidable impacts and disturbance to wetland resource areas. Impacts to the fauna and flora will be mitigated in accordance with Section 9.2.1.4 of the Feasibility Study (Metcalf and Eddy, 1991b) and the requirements discussed below."
(Section VI.A)

- Perform a pre-remediation assessment of wetland conditions to serve as a baseline by which compliance with Performance Standards will be measured. (Section VI.A.1., page 18)
- Develop a wetland restoration and/or enhancement program during remedial design. (Section VI.A.2., page 18)
- Implement the wetland restoration program in accordance with the EPA approved schedule (EPA will determine when the wetland restoration will commence). (Section VI.A.3., page 19)
- Achieve the Performance Standards (Section VI.B)
- Assess the success of the restoration during long term monitoring. (Section VI.A.5., page 19; VI.B, page 20)
- Replant wetlands if Performance Standards are not maintained. (Section VI.A.6., page 20)
- Perform periodic maintenance to ensure final restoration of the designated wetland areas, (Section VI.A.6, page 20)
- Incorporate wetland assessments to determine the success of restoration into the monitoring program. (Section VI.A.7; Section VI.A.5; VII.A; and IX.B.1.d)

Performance of the baseline wetland assessment and development of the wetland restoration plan have been completed as part of the Remedial Design. Section VI.B. of the SOW identifies the specific Performance Standards for the wetland restoration components of the Selected Remedy. These Performance Standards apply for the most part to post-construction conditions. The steps required to demonstrate compliance with these standards will be undertaken during the O&M period, which begins upon EPA approval of this Final Remedial Construction Report.

Wetlands disturbed by excavation were immediately backfilled and restored to a condition as close as possible to their pre-existing conditions. Wetlands vegetation was planted as soon as appropriate. Continued monitoring will be undertaken to demonstrate that the growth of wetlands vegetation is maintained. Wetlands restoration will be monitored on a regular basis, as described in the O&M Plan. Reports will be prepared for USEPA and MADEP presenting monitoring data on the wetlands restoration on a schedule described in the O&M Plan. The O&M Reports will evaluate the success of achieving the Performance Standards.

After Certification of Completion of Construction is approved by EPA, the Post-Construction wetlands monitoring program will be implemented to measure the overall success of the wetland restoration. The annual Post-Construction Monitoring program will continue for at least 5 years, at which point a report can be submitted demonstrating compliance with the Wetland Restoration Performance Standards. If the Demonstration of Compliance report is not approved by EPA within the first five years of annual Post-Construction Monitoring, the annual Post-Construction Monitoring program will continue beyond the 5 year period until the Demonstration of Compliance Report has been approved by EPA, after reasonable opportunity for review and comment by MADEP. After the conclusion of Post-Construction Monitoring, the Long-Term Monitoring program will start on a five year recurrence interval; the first Long-Term Monitoring episode will occur five years after the last annual Post-Construction Monitoring event. The results of the monitoring program at the end of the second full growing season will be used to evaluate whether the Performance Standard of 75% aerial coverage of wetland plant species has been achieved. Monitoring reports documenting the progress of wetlands restoration will be

submitted to the USEPA on a schedule presented in the Wetlands Restoration Plan and the O&M Plan.

References

EPA, 1993 (a). Consent Decree (CD), United States of America and Commonwealth of Massachusetts V. AVX Corporation et al, Civil Action No. 93-10104-K. April 26, 1993.

EPA, 1993 (b) Statement of Work (SOW), Remedial Design/Action Plan, Sullivan's Ledge Superfund Site Second Operable Unit, Appendix B to the CD, April 26, 1993.

EPA, 1991 Record of Decision (ROD), Sullivan's Ledge Superfund Site, Middle Marsh Operable Unit, September 27, 1991.

HLA, 1999 Remedial Action Work Plans (RAWP), Sullivan's Ledge Superfund Site OU-1 Phase II Remediation, OU-2 Phase I & II Remediation, May 5, 1999.

URS, 1999 Final Remedial Design, Plans and Specifications, Second Operable Unit, Sullivan's Ledge Superfund Site, January 1999.

6.0 CERTIFICATION OF REMEDIAL CONSTRUCTION COMPLETION

I, Gary M. Garfield, A Professional Engineer registered in the Commonwealth of Massachusetts, hereby certify that to the best of my knowledge:

- I am familiar with the 1993 Consent Decrees and Scope of Work for completion of the OU2 Remedial Action
- I am familiar with the Design Reports, Technical Specifications and Design Drawings prepared by Dames & Moore (now URS) related to the OU2 Remedial Action
- Personnel under my supervision have made site visits, observed construction activities, and performed quality assurance/ quality control consistent with the Technical Specifications and Design Reports prepared by Dames & Moore
- OU2 Remedial Action activities overseen by Dames & Moore have been performed consistent with the EPA approved remedial design, plans and specifications and subsequent revisions.

I certify that to the best of my knowledge, after appropriate inquiries of all relevant persons involved in the preparation of this report, the information submitted is true, accurate and complete.

Gary M. Garfield
Gary M. Garfield
Massachusetts Professional Engineer Number 35232

8/13/01
Date



August 13, 2001

PN: 28367-006-9650:J:28367 - AVX006Const. Closeout Rpt\Final Remedial Const. Rpt..doc

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TABLE 4-1
TECHNICAL SPECIFICATION SUBMITTAL LIST
Remedial Action
Operable Unit Two
Sullivan's Ledge Superfund Site
New Bedford, MA

Specification Section	Section Title / Submittal Description	Submitted By	Required	Status			Applicable Remedial Activity
				HHA/HM#	Received	Response	
01005	ADMINISTRATIVE REQUIREMENTS						
	Construction Schedule	Contractor	14 Days from NTP	Meetings	N/A	N/A	Excavation, Placement, Restoration
	Phone Numbers of three (3) Responsible Persons	Contractor	N/A	HASP	6/22/1999	Reviewed	Excavation, Placement, Restoration
	Qualifications of MA licensed Surveyor	Contractor	N/A	6004	4/12/1998	Approved	Excavation, Placement, Restoration
01065	HEALTH & SAFETY						
	Qualifications and Experience of CHH	Contractor	Prior to CHASP prep				Excavation, Placement, Restoration
	Contractor's Health & Safety Plan (CHASP) * general work description * key personnel and organizational chart * hazard evaluation * engineering and work practice controls * training * PPE and levels of protection * medical surveillance program * employee heat and cold stress prevention * site standard operating procedures * site controls * Emergency Response and Contingency Plan * Fire Protection Plan	Contractor	1 wk prior to mobe	HASP	6/22/1999	Reviewed	Excavation, Placement, Restoration
	Levels of Protection and Schedule of Training	Contractor	1 wk prior to mobe	HASP	6/22/1999	Reviewed	Excavation, Placement, Restoration
	Personnel Certificates of Training and Medical Monitoring	Contractor	1 wk prior to mobe	Ongoing	N/A	N/A	Excavation, Placement, Restoration
	Written Verification of Emergency Response Contacts	Contractor	Prior to start of work	HASP	6/22/1999	Reviewed	Excavation, Placement, Restoration
	REMEDIAL ACTION WORK PLAN						
	Remedial Action Work Plan (RAWP) * address items in SOW Section IX.B.1. a. through g. * storm water management/erosion control * stream diversion * removal of wetland and marsh sediment/soils * air drying and amendment * sediment/soil stockpiling * grading of soil and sediment * management and disposal of construction water * restoration of wetlands	Contractor	Prior to start of work Year 2000 Addendum	RAWP Addendum	7/12/1999 3/1/2000	Reviewed Reviewed	Excavation, Placement, Restoration Excavation, Placement, Restoration
01170	MATERIAL HANDLING PLAN						
	Material Handling Plan	Contractor	Prior to start of work	RAWP	7/12/1999	Reviewed	Excavation, Placement
	Final Conformation Sampling Results						Excavation, Placement, Restoration
01300	SUBMITTALS						
	Construction Schedule Revised (see also Section 01005)	Contractor	each payment application	Ongoing	N/A	N/A	Excavation, Placement, Restoration
	CHASP - See Section 01065	N/A	N/A	N/A	N/A	N/A	
	Contractor's Project Team	Contractor	Preconstruction meeting	RAWP	7/12/1999	Reviewed	Excavation, Placement, Restoration
	Construction Quality Assurance Plan - See Section 01400	N/A	N/A	N/A	N/A	N/A	
	RAWP - See Section 01100	N/A	N/A	N/A	N/A	N/A	
	Proposed Products List	Contractor	14 Days from NTP	N/A	N/A	N/A	
	Shop Drawings	Contractor	Prior to installation	N/A	N/A	N/A	
	Product Data - per individual Spec Sections	N/A	N/A	N/A	N/A	N/A	
	Manufacturer's Instructions-per Spec Sections	N/A	N/A	N/A	N/A	N/A	
	Manufacturer's Certificates-per Spec Sections	N/A	N/A	N/A	N/A	N/A	

TABLE 4-1
TECHNICAL SPECIFICATION SUBMITTAL LIST
Remedial Action
Operable Unit Two
Sullivan's Ledge Superfund Site
New Bedford, MA

Specification Section	Section Title / Submittal Description	Submitted By	Required	Status			Applicable Remedial Activity
				HEA ID#	Received	Response	
01400	QUALITY CONTROL						
	Construction Quality Assurance Plan <ul style="list-style-type: none"> * communication * Contractor's QA/QC personnel qualifications * general construction activities QA/QC elements * QA/QC requirements for collection and analysis of soil, water and sediment samples for chemicals * QA/QC requirements for collection and analysis of soil for soil properties, compaction and placement * Subcontractor's qualifications and responsibilities * documentation 	Contractor	14 Days from NTP	RAWP	7/12/1999	Reviewed	Excavation, Placement, Restoration
01500	CONSTRUCTION FACILITIES AND TEMPORARY CONTROLS						
	Spill and Discharge Control Plan (SPCC) <ul style="list-style-type: none"> * procedures for containing dry and liquid spills * absorbent material available on-site * procedures for storage of spilled material * decontamination procedures * spill incident report format 	Contractor	14 Days from NTP	RAWP	7/12/1999	Reviewed	Excavation, Placement, Restoration
	Traffic Control Plan	The City	N/A	N/A	N/A	N/A	Placement
01700	CONTRACT CLOSEOUT						
	Contractor's Project Record Documents	Contractor	Prior to final payment				
	As-built Drawings - Site <ul style="list-style-type: none"> * location and elevation of remaining utilities, fencing and storm water controls * location and elevation of restored areas after site facilities such as roads, treatment pad and staging areas have been removed 	Contractor	After site rehab				
	As-built Drawings - Wetlands <ul style="list-style-type: none"> * topographic plan within 1-foot increments * location of wetlands plantings * locations and elevations of all springs, tributaries and streams located in the wetlands 	Contractor	After wetlands rehab				
02130	PERIMETER AIR MONITORING AND DUST CONTROL PLAN						
	Perimeter Air Monitoring and Dust Control Plan <ul style="list-style-type: none"> * general plan details * number and location of stations * duration of perimeter air monitoring * equipment * records 	Contractor	14 Days from NTP	RAWP	7/12/1999	Reviewed	Excavation, Placement

TABLE 4-1
TECHNICAL SPECIFICATION SUBMITTAL LIST
Remedial Action
Operable Unit 1
Sullivan's Ledge Superfund Site
New Bedford, MA

Specification Section	Section Title / Submittal Description	Submitted By	Required	Status			Applicable Remedial Activity
				HLA ID#	Received	Response	
02205	SOIL MATERIALS						
	Source of Soil Materials * for each soil material	Contractor	Prior to use	6008 6011 6016 6017	4/22/1999 5/12/1999 6/24/1999 7/21/1999	Conditional Approved Rejected Approved	Excavation, Restoration Excavation, Restoration N/A Excavation, Restoration
	Source Owner Affidavit of Clean Source Site * for each soil material	Contractor	Prior to use	6011	5/12/1999	Approved	Excavation, Restoration
	Analytical Testing Results Data (see spec for tests) * for each soil material	Contractor	Prior to use	6008 6011 6016 6017 6028	4/22/1999 5/12/1999 6/24/1999 7/21/1999 11/16/2000	Conditional Approved Rejected Approved	Excavation, Restoration Excavation, Restoration N/A Excavation, Restoration
	Topsoil pH Test Results	Contractor	Prior to use	6028	11/16/2000		
	Wetlands Topsoil * gradation * pH 5.5 to 7.5 * total N (%) 0.1 - 0.3 * total P (%) 0.1 - 0.3 * total K (%) 0.1 - 0.3 * total Ca (%) 0.3 - 0.5 * organic content (%) 20 - 30 * permeability (cm/sec) 1x10-4 to 1x10-3 * meet requirements of 40 CFR 230	Contractor	Prior to use	6022 6028	8/31/1999 11/16/2000	Approved	Restoration
02210	STORM WATER POLLUTION PREVENTION PLAN						
	Storm Water Pollution Prevention Plan	Contractor	Prior to site disturbance	RAWP	7/12/1999	Reviewed	Excavation, Placement
	Silt Fence	Contractor	Prior to use	6005	4/9/1999	Approved	Excavation, Placement, Restoration
	Erosion Control Matting	Contractor	Prior to use	6005	4/9/1999	Approved	Excavation, Placement
02211	GRADING OF GOLF COURSE FAIRWAY						
	Project Record Documents - See Section 01700	N/A	N/A	N/A	N/A	N/A	
02217	GEOSYNTHETIC						
	Manufacturer's Certification * that material meets physical property requirements for the intended application	Contractor	15 days after agreement				
	Material Samples * 4 oz non-woven geotextile * 12 oz non-woven geotextile cushion * woven geotextile access road reinforcement	Contractor	15 days after agreement	6006	4/14/1999	Approved	Excavation, Placement, Restoration
	Contractor's Written Warranty (for two years)	Contractor	After date of acceptance				
	Manufacturer's QA/QC Documentation (every 10,000 sqft) * mass per unit area * thickness * grab tensile strength/elongation * trapezoidal tear strength * puncture resistance * burst strength	Contractor	Upon request	6020	8/11/1999		Excavation, Placement, Restoration

TABLE 4-1
TECHNICAL SPECIFICATION SUBMITTAL LIST
Remedial Action
Operable Unit Two
Sullivan's Ledge Superfund Site
New Bedford, MA

Specification Section	Section Title / Submittal Description	Submitted By	Required	Status			Applicable Remedial Activity
				HLA ID#	Received	Response	
02218	GEOGRIDS						
	Manufacturer's Certification * that material meets physical property requirements for the intended application	Contractor	15 days after agreement	6001A	4/7/1999	Conditional Approval	Excavation, Restoration
	Material Samples * BX 1100 * BX 1500	Contractor	15 days after agreement	6001A	4/7/1999	Approved	Excavation, Restoration
	Contractor's Written Warranty (for two years)	Contractor	After date of acceptance				
	Manufacturer's QA/QC Documentation * tensile modulus every 200,000 sqft * junction strength every 200,000 sqft * ultimate tensile strength every 200,000 sqft * coating thickness every 100,000sqft * intrinsic viscosity every 150,000 sqft * carboxyl end group every 150,00 sqft * resin QC certificates every batch	Contractor	Upon request	6020	8/11/1999		Excavation, Restoration
	Installation Drawings	Contractor	Prior to installation				
02221	EXCAVATION, FILLING AND BACKFILLING FOR CONSTRUCTION FACILITIES						
	Soil materials QA/QC Testing - See Section 02205	N/A	N/A	N/A	N/A	N/A	
02225	CONSTRUCTION WATER MANAGEMENT PLAN						
	Construction Water Management Plan	Contractor	Prior to intrusive work	RAWP	7/12/1999	Reviewed	Excavation
	Shop Drawings and Test Results Used in Design	Contractor	Prior to intrusive work	OU-1	N/A	N/A	
02226	SEDIMENT EXCAVATION AND PLACEMENT						
	Sediment Excavation and Placement Plan * procedures used to excavate, mix, stabilize, stockpile, transport and place sediments in OU-1 landfill * sediment drying pad re-design (if required) * construction equipment * proposed test methods * procedures for dust, vapor and odor control * stabilization mix design * types and sources of stabilization materials * schedule and sequence of sediment excavation * proposed locations of equipment and operations	Contractor	Included in RAWP	RAWP	7/12/1999	Reviewed	Excavation, Placement
	Results of Sediment Excavation and Placement Demonstration	Contractor	After demonstration	Letter	7/29/1999	Reviewed	Excavation, Placement
	Results of Analytical Testing and COCs (confirmatory samples)	Contractor	24 hrs after testing	Ongoing	N/A	N/A	Excavation
02500	ROADS						
	Submittals in Accordance with Sections 01300, 02217, 02218, and 02936		N/A	N/A	N/A	N/A	
02831	CHAIN LINK FENCES AND GATES						
	Manufacturer's Product Data and Installation Instructions	Contractor	Prior to installation	6010	4/28/1999	Approved	Excavation, Placement
02936	SEEDING AND MULCHING						
	Maintenance Data	Contractor	Prior to final payment				
	Agronomic Test Results for Fert. & Lime Application Rates	Contractor	Prior to application				

TABLE 4-1
 TECHNICAL SPECIFICATION SUBMITTAL LIST
 Remedial Action
 Operable Unit Two
 Sullivan's Ledge Superfund Site
 New Bedford, MA

Specification Section	Section Title / Submittal Description	Submitted By	Required	Status			Applicable Remedial Activity
				HLA ID#	Received	Response	
02940	WETLANDS RESTORATION						
	Vendor Certificates for Each Seed Mixture and Type Required	Contractor	4 wks prior to planting	6024 6029	1/12/2000 1/15/2001		Restoration Restoration
	Vendor Certificates for Plant Stock	Contractor	4 wks prior to planting	6024 6026 6029	1/12/2000 1/20/2000 1/15/2001		Restoration Restoration Restoration
	Wetlands Microtopography Document	Contractor	Prior to excavation	6012	5/11/1999		Restoration
	Annual Reports of Wetlands Monitoring	Contractor	60 days after monitoring				

TABLE 4-2
ANALYTICAL RESULTS OF CONFIRMATORY SAMPLING
SULLIVAN'S LEDGE SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS

Sample Location	Polychlorinated Biphenyls (8082) (mg/kg)	Total Combustible Organics (ASTM D2974-87) (%)	Mass of Polychlorinated Biphenyls per Unit Mass of Carbon ug/g Organic Carbon	Meet Cleanup Criteria of 15 mg/kg For PCB or 20 ug PCB per g of Carbon	% Solids	Comments
<i>Cells A & N</i>						
CSMM-100899-Sed-MMA/N1	0.99	NA	Not Applicable	Yes	29	
CSMM-100899-Sed-MMA/N2	2.40	NA	Not Applicable	Yes	24	
CSMM-100899-Sed-MMA/N3	4.40	NA	Not Applicable	Yes	29	
CSMM-100899-Sed-MMA/N4	4.50	NA	Not Applicable	Yes	22	
CSMM-100899-Sed-MMA/N5	7.00	NA	Not Applicable	Yes	36	
CSMM-100899-Sed-MMA/N6	5.60	41	13.7	Yes	21	
<i>Cells B & C</i>						
CSMM-081399-Sed-MMBC1-0000	6.03	NA	Not Applicable	Yes	23	
CSMM-081399-Sed-MMBC2-0000	11.60	NA	Not Applicable	Yes	22	
CSMM-081399-Sed-MMBC3-0000	4.55	NA	Not Applicable	Yes	19	
CSMM-081399-Sed-BC3-DUP02	4.56	NA	Not Applicable	Yes	19	Duplicate of MMBC3
CSMM-081399-Sed-MMBC4-0000	7.80	NA	Not Applicable	Yes	57	
CSMM-081399-Sed-MMBC5-0000	9.60	NA	Not Applicable	Yes	27	
CSMM-081399-Sed-MMBC6-0000	16.40	NA	Not Applicable	No (additional soil removal performed)	16	Resampled
CSMM-082099-Sed-MMB6-001R	1.30	NA	Not Applicable	Yes	25	Resample of MMB6 after further remediation
<i>Cell D</i>						
CSMM-082599-Sed-MMD1-0000	12.00	NA	Not Applicable	Yes	33	
<i>Cell E</i>						
CSMM-080399-Sed-MME1-0000	2.80	NA	Not Applicable	Yes	17	
CSMM-080399-Sed-MME2-0000	12.00	NA	Not Applicable	Yes	27	Resampled since EPA split sample >15mg/kg
CSMM-081099-Sed-MME2-0001	0.63	NA	Not Applicable	Yes	10	Resample of MME2 after further remediation
CSMM-080399-Sed-MME3-0000	3.40	NA	Not Applicable	Yes	13	
<i>Cell F</i>						
CSMM-08599-Sed-MMF1-0000	4.77	NA	Not Applicable	Yes	12	
CSMM-08599-Sed-MMF2-0000	2.81	NA	Not Applicable	Yes	19	
CSMM-08599-Sed-MMF3-0000	3.67 J	NA	Not Applicable	Yes	19	
<i>Cell G</i>						
CSMM-102699-Sed-MMG1	4.40	NA	Not Applicable	Yes	40	
CSMM-102699-Sed-MMG2	0.09	NA	Not Applicable	Yes	63	
CSMM-102699-Sed-MMG3	0.79	NA	Not Applicable	Yes	19	
<i>Cell H</i>						
CSMM-082099-Sed-MMH1-0000	ND(0.08)	NA	Not Applicable	Yes	58	
CSMM-082099-Sed-MMH2-0000	14.00	NA	Not Applicable	Yes	17	
<i>Cell I</i>						
CSMM-090999-Sed-MMH1-0000	2.00	NA	Not Applicable	Yes	25	

TABLE 4-2
ANALYTICAL RESULTS OF CONFIRMATORY SAMPLING
SULLIVAN'S LEDGE SUPERFUND SITE
NEW BEDFORD, MASSACHUSETTS

Sample Location	Polychlorinated Biphenyls (8082) (mg/kg)	Total Combustible Organics (ASTM D2974-87) (%)	Mass of Polychlorinated Biphenyls per Unit Mass of Carbon ug/g Organic Carbon	Meet Cleanup Criteria of 15 mg/kg For PCB or 20 ug PCB per g of Carbon	% Solids	Comments
<i>Cell J & K</i>						
CSMM-082599-Sed-MMJ/K1-0000	0.94	NA	Not Applicable	Yes	9	
CSMM-082599-Sed-MMJ/K2-0000	0.61	NA	Not Applicable	Yes	9	
CSMM-082599-Sed-MMJ/K3-0000	0.70	NA	Not Applicable	Yes	12	
CSMM-082599-Sed-MMJ/K4-0000	1.50	NA	Not Applicable	Yes	14	
CSMM-082599-Sed-MMJ/K5-0000	2.70	NA	Not Applicable	Yes	11	
CSMM-082599-Sed-MMJ/K6-0000	1.60 NJ	27	5.9	Yes	24	
<i>Cell L</i>						
CSMM-090999-Sed-MML1-0000	3.00	NA	Not Applicable	Yes	30	
CSMM-090999-Sed-MML2-0000	ND(0.34)	NA	Not Applicable	Yes	12	
<i>Cell M</i>						
CSMM-081899-Sed-MMM1-0000	ND(0.08)	NA	Not Applicable	Yes	79	
<i>Access Roads</i>						
CSMM-061899-S-DUP01	5.00 J	NA	Not Applicable	Yes	20	Duplicate of WAR1
CSMM-061899-S-WAR1	3.40	NA	Not Applicable	Yes	16	
CSMM-062299-S-WAR2	1.80 J	NA	Not Applicable	Yes	12	
CSMM-062499-S-WAR3	13.00	19	68	No (further soil removal performed)	57	Resampled
CSMM-111899-S-WAR3-R1	0.27	23	1.2	Yes	36	Resample of WAR3 after further remediation
CSMM-062899-S-WAR4	ND(0.24)	NA	Not Applicable	Yes	16	
CSMM-071499-Sed-WAR5-0000	ND(0.08)	NA	Not Applicable	Yes	80	
CSMM-071999-Sed-WAR6-0000	1.10	NA	Not Applicable	Yes	44	
CSMM-072199-Sed-WAR7-0000	0.09	NA	Not Applicable	Yes	67	
CSAW-062499-S-AW11-0000	ND(0.08)	NA	Not Applicable	Yes	93	
CSAW-02899-S-AW12-0000	ND(0.08)	NA	Not Applicable	Yes	91	
CSAW-062899-S-AW13-0000	0.28 J	NA	Not Applicable	Yes	87	
CSAW-070699-S-AWP1-0000	2.70	NA	Not Applicable	Yes	83	
CSAW-062499-S-AWP2-0000	ND(0.08)	NA	Not Applicable	Yes	88	
CSAW-062499-S-AWP3-0000	0.08	NA	Not Applicable	Yes	91	
Area4-South-111799-Washout	0.43	NA	Not Applicable	Yes	87	
Area4-North-111799-Washout	1.40	NA	Not Applicable	Yes	84	
EQPTRINSE070199-W-OU1-0001	ND(0.2)	NA	Not Applicable	Not Applicable	NA	
EQPRINSE-081099-W-OU2-0001	ND(0.2)	NA	Not Applicable	Not Applicable	NA	
EQPRINSE-100899W-OU2-0002	ND(0.2)	NA	Not Applicable	Not Applicable	NA	

Notes:

J = Estimated Concentration

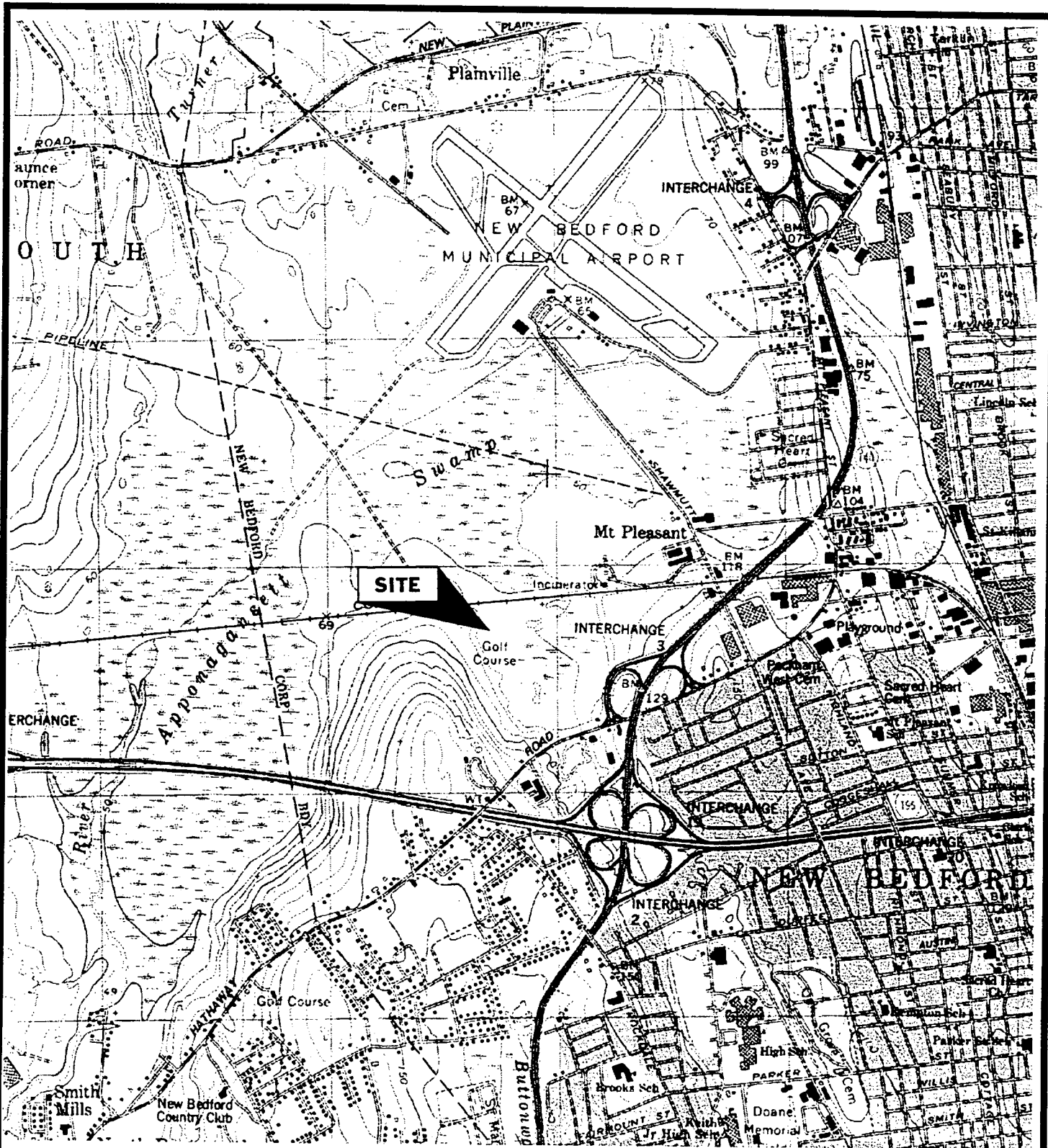
ND = Not detected (detection limit)

NA = Not Analyzed

NJ = Presumed Present, Estimated Concentration

TABLE 4-3
EPA CHANGE REQUESTS SUMMARY
Sullivan's Ledge Superfund Site
Operable Unit 2
New Bedford, MA

Change No.	Minor/Major	Description	Purpose	Date Issued	Date Approved by EPA
OU2-001	Minor	Change the organic content range of wetland topsoil.	Make the organic content range for OU-1 and OU-2 consistent.	9/8/1999	9/17/1999
OU2-002	Minor	Schedule extension of 5 calendar days from November 11, 1999 to November 16, 1999.	Extend period of time for project completion to accommodate impacts from Hurricane Floyd.	9/28/1999	10/6/1999
Not Numbered	Minor	Change the seed mix for restoration of the disturbed areas of the golf course.	The golf course superintendent requested that the seed mix for golf course restoration be changed to a golf course type seed mix.	11/16/1999	11/23/1999
OU2-003	Minor	To clarify and delete the requirement for the Engineer to collect split samples.	To verify in writing that the EPA waived the requirement for the Engineer to collect split samples during the Project.	9/14/2000	5/2/2001
OU2-004	Minor	To add the option of both mechanical (cutting) and passive (shading with tree growth) control of invasive common cattails in the wetlands.	To allow the option of both mechanical (cutting) and passive (shading with tree growth) control of invasive species in the wetlands.	9/14/2000	5/2/01 Conditional on the revision of the O&M Plan
OU2-005	Minor	Change the requirement of a chain link security fence at the perimeter of the Middle Marsh and Adjacent Wetland to a marker fence consisting of green metal post and yellow nylon rope.	To make the marking of the restoration areas less obtrusive than a chain link fence.	9/14/2000	5/2/2001
OU2-006	Minor	To relieve the Contractor of their responsibilities for seeding, mulching, and maintenance in the fairways and roughs of the golf course.	To allow Johnson Golf Management to take on the responsibilities of seeding, mulching, and maintenance of the fairway and rough areas. Also to allow Johnson Golf Management to change the seed mixes to types they prefer to use in the fairways and roughs.	9/19/2000	5/2/2001



SOURCE:
USGS NEW BEDFORD, MA QUADRANGLE
7.5 MINUTE SERIES TOPOGRAPHIC MAP
DATED 1979

0 1000 2000 4000

APPROXIMATE SCALE (FEET)



SITE LOCATION

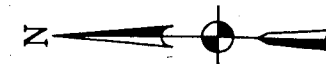
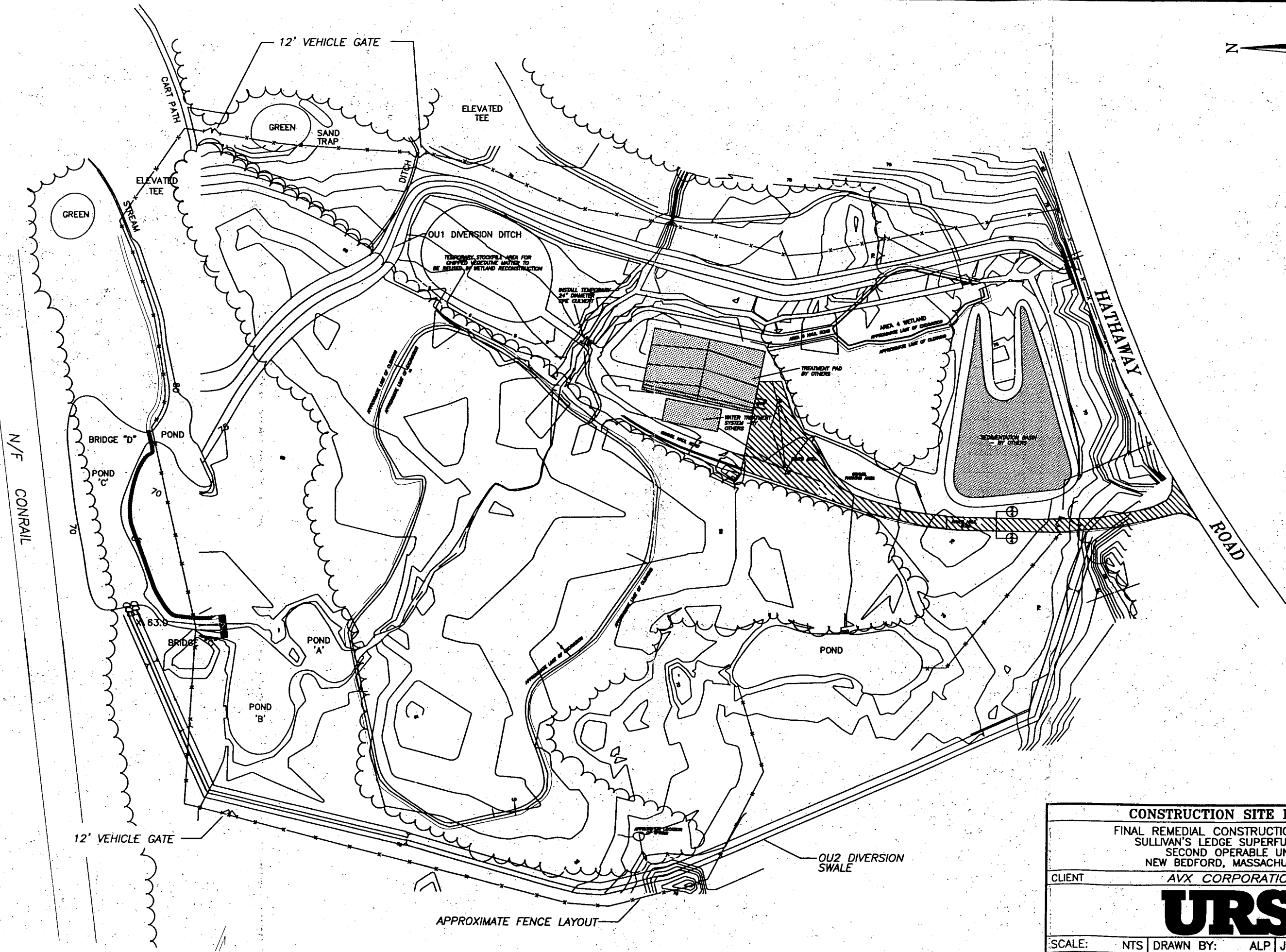
FINAL REMEDIAL CONSTRUCTION REPORT
SULLIVAN'S LEDGE SUPERFUND SITE
SECOND OPERABLE UNIT
NEW BEDFORD, MASSACHUSETTS

CLIENT AVX CORPORATION

URS

SCALE 1"=2000' DRAWN BY ALP JOB NO. 28367-006
DATE 5/01 APPR. BY MMW FIG. NO. 1

28367-006-1.DWG



CONSTRUCTION SITE LAYOUT

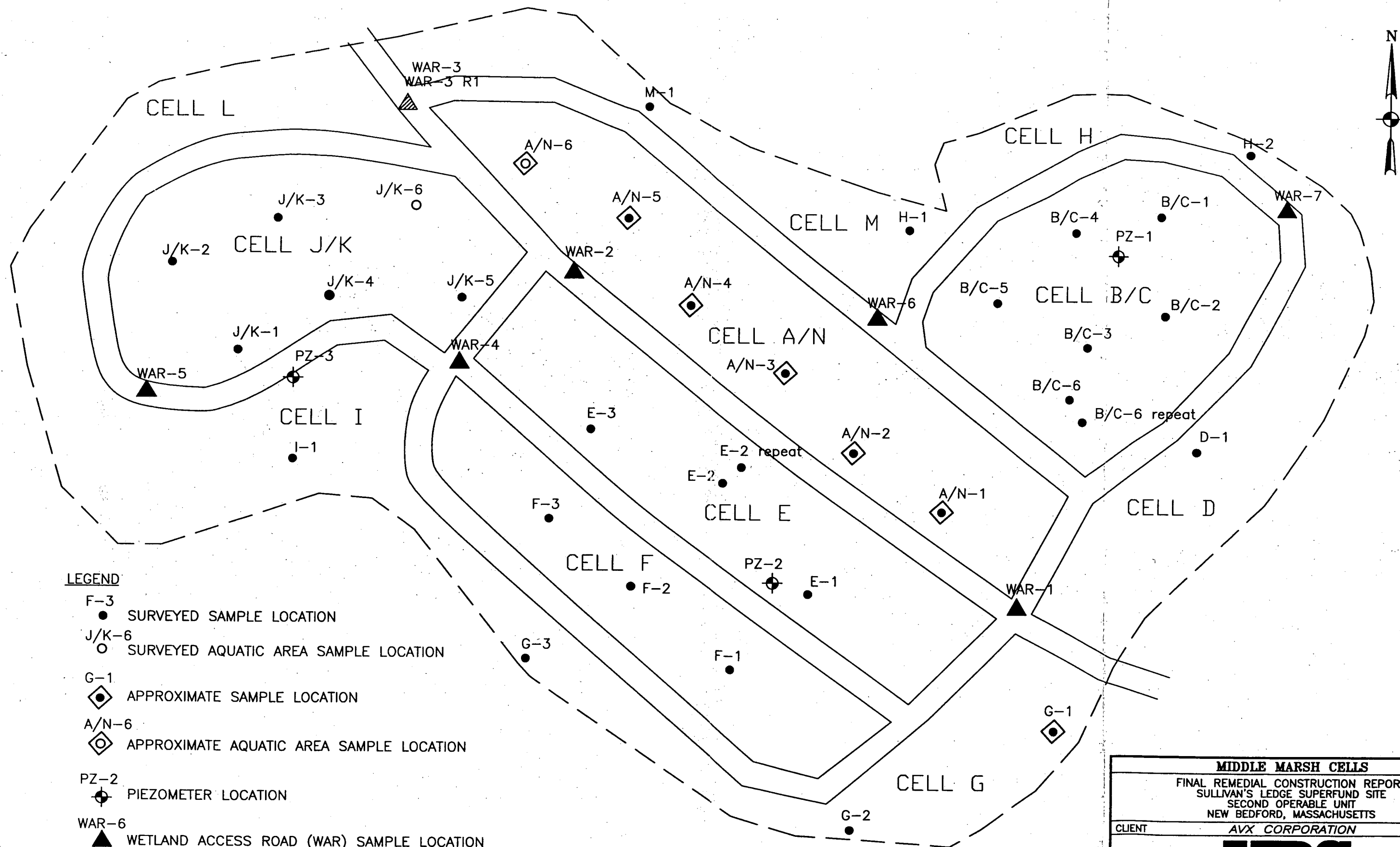
FINAL REMEDIAL CONSTRUCTION REPORT
SULLIVAN'S LEDGE SUPERFUND SITE
SECOND OPERABLE UNIT
NEW BEDFORD, MASSACHUSETTS

CLIENT AVX CORPORATION



SCALE:	NTS	DRAWN BY:	ALP	JOB NO.:	28367-006
DATE:	5/01	APPR. BY:	MMW	FIGURE NO.:	2

T:\28367\006\MIDDLEMARSHCELL.DWG



LEGEND

- F-3 ● SURVEYED SAMPLE LOCATION
- J/K-6 ○ SURVEYED AQUATIC AREA SAMPLE LOCATION
- G-1 ◈ APPROXIMATE SAMPLE LOCATION
- A/N-6 ◈ APPROXIMATE AQUATIC AREA SAMPLE LOCATION
- PZ-2 ⊕ PIEZOMETER LOCATION
- WAR-6 ▲ WETLAND ACCESS ROAD (WAR) SAMPLE LOCATION
- WAR-3 ▲ WETLAND ACCESS ROAD (WAR) AQUATIC AREA SAMPLE LOCATION

MIDDLE MARSH CELLS			
FINAL REMEDIAL CONSTRUCTION REPORT SULLIVAN'S LEDGE SUPERFUND SITE SECOND OPERABLE UNIT NEW BEDFORD, MASSACHUSETTS			
CLIENT		AVX CORPORATION	
URS			
SCALE:	NTS	DRAWN BY:	ALP
DATE:	5/01	APPR. BY:	MMW
JOB NO.:		28367-006	
FIGURE NO.:		3	